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Access to Banking, Savings and Consumption Smoothing in Rural India

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Access to Banking, Savings and Consumption Smoothing in Rural India

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Abstract

Access to formal banking is increasing across the world and may transform how people manage their finances. We report from a field experiment that randomly provides access to a bank account to a representative sample of villagers in rural India. The treated respondents save actively into the account and their individual savings increase. There is, however, no significant impact on mean household savings nor on average expenditures, income, loans or transfers. Based on weekly data from financial diaries, we show the control households partially smooth consumption through transfers received from others. The treated households smooth consumption (and nutrition) better than the control households, thanks to pro-cyclical saving on the account. The latter result provides an important new insight into the role of banking in low and middle-income countries.

JEL: C93, D14, G21, O16, O12.

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1 Introduction

How much households consume and save, and whether they can smooth consumption over time, are two fundamental questions in economics. Access to formal banking is increasing in many countries and offers the opportunity to study consumption decisions when saving is facilitated. To shed new light on these questions, we combine a randomized controlled trial that helps people to open bank accounts with detailed information from weekly financial diaries. The randomized trial enables the identification of causal effects on average consumption, savings and earnings, and the financial diaries record changes in savings and consumption patterns within a household over time. The financial diaries also provide more accurate measurements of incomes and expenditures than traditional survey data.

The study sample is drawn from seventeen villages in Chhattisgarh, a central-eastern state of India. As a result of India's financial inclusion policies, a formal bank recently started operating in each of those villages. The bank operates close to the villagers' houses (300m on average), which greatly improves the accessibility of formal banking and reduces transaction costs. We randomly selected villagers who had not yet opened an account and assisted half of them to open one. Next, we organized a practical information session for the treated households. We showed them how to deposit and withdraw, and demonstrated how a fingerprint recognition tool protects their savings. Once they were familiar with the features and security of their account, we started the weekly interviews. In total, we organized seventeen interviews per respondent between February and May, and July and August 2014. The interviews took place on the same day of the week at a centrally located room in the village.

We first look at account usage by the treated households and conclude that they use their accounts actively. During the 17 weeks of the experiment, 62 percent deposited at least once and the average person made 3 deposits. They made fewer withdrawals than deposits and therefore accumulated about INR 30 per week. This shows there is a demand for savings - even among low income people - and that this demand can be met by providing a simple and convenient savings tool. As such, our evidence is fully consistent with the argument that low savings are at least partially due to high transaction costs, and that simplifying savings tools

can have important effects.[1]

Next, we estimate the impact of providing a bank account on savings. The treated respondents have higher total savings (as measured by the sum over all their financial assets), but the increase is not sufficiently large to impact total savings at the household level. Unsurprisingly, there is therefore no effect on other household level outcomes such as expenditures, loans, transfers and income. The absence of impact on the households' average levels of savings and consumption is consistent with the findings in two related studies: Dupas et al. (2018) in Chile, Malawi and Uganda; and Kast and Pomeranz (2014) in Chile.[2]

The results we have described contribute to the literature on the promotion of formal banking among low income populations. In recent years, the potential benefits of financial inclusion have received a lot of attention from several governments and the international community. It also became an explicit target of the United Nations' first Sustainable Development Goal, "End poverty". Concomitantly, an increasing number of research projects focused on the topic. Dupas et al. (2018) have an excellent review of the literature and Steinert et al. (2018) provide a meta-analysis.

The finding that access to banking does not alter average expenditures at the household level does not preclude a difference in volatility. Therefore, the second part of the paper uses the detailed weekly information to test whether the new savings opportunity translates into improved consumption smoothing. We follow the approach of Townsend (1994) and presume that expenditures should not correlate with weekly variations in income within a household if expenditures are perfectly smoothed over time. We argue that this approach is valid given that the treatment did not impact the respondent's income or income at the household level. The results are promising, as access to a savings account significantly improves consumption smoothing: when the weekly income is below the household's median income, food expenditures are 20 percent lower for control households, while the correlation is close to zero for the treated households. This difference is entirely

[1] Among others, see Thaler and Benartzi, 2004; Carroll et al., 2009; Beshears et al., 2013; Dupas and Robinson, 2013b; Dupas et al., 2018; Somville and Vandewalle, 2018.

[2] On the contrary, covering the opening and maintenance fees of basic savings accounts induced an increase in total savings of households in Kenya (Dupas and Robinson, 2013a; Dupas et al., forthcoming) and Nepal (Prina, 2015).

due to perishable food: there is no difference for non-perishable food that could be stored for tight weeks. When we focus on nutrition instead of expenditures the results are similar: treated households smooth acquired calories better than control households and the difference is entirely driven by perishable food. Finally, we show that the control households partially smooth consumption through transfers received from others, while the treated households smooth consumption (and nutrition) better thanks to pro-cyclical saving on their new bank accounts.

These results make an important contribution to the empirical literature on consumption smoothing. Given that poor households face substantial income risks, it is important to understand how they manage these risks. Development economists researched extensively the extent to which people smooth consumption and the strategies they use to manage and cope with risk.[3] A limited number of papers study the role of banking in mitigating risk and facilitating consumption smoothing. Islam and Maitra (2012) document how microcredit in Bangladesh facilitates consumption smoothing. Kinnan and Townsend (2012) and Gertler et al. (2009) provide comparable evidence for formal and informal credit transactions in Thailand and Indonesia respectively. Jack and Suri (2014) show how the development of mobile banking improves insurance between people by reducing the costs of transfers in Kenya. The main limitation of these studies is the lack of an exogenous change in access to credit markets. Instead, they rely on panel estimations with household fixed effects to control for time-invariant observables (which we also do) and on the distance to financial services, assuming this is exogenous. While we do not contest the importance and value of the insights in these papers, the estimates may suffer from an endogeneity bias. An important contribution of our paper is the randomized access to banking as a source of variation to identify how access to financial services improves consumption smoothing. As such, it bridges a gap between two strands of literature: the randomized trials that focus on the average impacts of access to banking but provide limited insights on its role in consumption smoothing, and papers that focus on consumption smoothing but lack exogenous variation in access to financial services.

[3]Some of the main references are Rosenzweig and Stark (1989); Deaton (1991, 1992); Paxson (1992, 1993); Rosenzweig and Wolpin (1993); Townsend (1994); Udry (1994); Townsend (1995); Kochar (1995); Morduch (1995, 1999) and Dercon (2002, 2005).

The paper is organized as follows. Section 2 provides more details on India's financial inclusion plan, our experimental design, the data and attrition. In Section 3, we discuss how the treated households use their accounts, before analyzing the impact of having a bank account on savings, expenditures, loans, transfers and income. Next, we show there is an important impact on consumption and nutrition smoothing which is driven by pro-cyclical saving on the account. We conclude in Section 4.

2 Background, Experimental Design and Data

In this section, we discuss India's financial inclusion program and then we describe the experimental design of our study, introduce the data, provide baseline characteristics and discuss attrition.

2.1 Financial Inclusion in India

The financial landscape has changed markedly in India. In 2006 the Reserve Bank introduced the Business Correspondents model, which led to a rapid increase in bank account penetration. Between 2011 and 2014, the share of banked adults increased from 35 to 53 percent (Demirgüç-Kunt et al., 2015). The model allows banks to appoint Business Correspondents (BCs), who provide financial and banking services on their behalf (RBI, 2006; RBI, 2008). In the region of our survey Axis bank appointed the financial inclusion company Basix Sub-K, which is our main partner on the project. Basix Sub-K's responsibilities are selecting one person per village to become the Business Correspondent Sub-Agent (BCSA) or bank agent, training the person, and providing equipment: a mobile phone, a finger print recognition device and a receipt machine that are all interconnected through bluetooth. Basix Sub-K also pays the bank agent, assists wherever needed and provides customer service for the clients.

The bank agent helps the villagers to open a *BCSA account*. To do so, he sends the customer's application form and a photo to Axis bank. The bank opens the account and communicates the unique account number to the bank agent. The account is then activated by registering the customer's finger prints. Once this procedure is finalized, the customer can perform standard transactions on the

account: deposits, withdrawals, money transfers, and balance inquiries. Transactions that reduce the account balance, or provide information about balance require a signature through the finger print recognition device. The customer has to pay an enrollment fee of INR 25, but transactions are free.[4]

In August 2014 - after we finalized our data collection - the government announced the National Mission for Financial Inclusion (PJYMD). This led to an additional boost in bank account penetration.[5]

2.2 Experimental Design

The experiment was conducted in 17 villages in rural Chhattisgarh, an east-central state of India. We selected villages without a cooperative, rural or commercial bank branch, to make sure the bank agent is the only person who provides formal banking services at the doorstep. The sampled villages are located in three different districts, pictured in Figure 2 in Appendix A.

In each village, we randomly selected 12 villagers who did not yet have a BCSA account. We allocated a random number to each person on the voter list and approached them in ascending order. Apart from not yet having opened a BCSA account, villagers had to meet three additional conditions for inclusion in our sample: (i) Being the head of the household or the head's spouse, (ii) not having plans to leave the village, and (iii) belonging to a household in which nobody has a savings account with another institution. We permitted for post office or other accounts that were opened to receive payments from welfare schemes, or MGNREGA. We also permitted for cooperative bank accounts that were used to receive income from the sale of crops. Villagers cannot deposit into post office or cooperative bank accounts and rarely do so into the other accounts, either because they are not protected (there is no secret code or biometric authentication), or

[4]The bank experimented with (very low) charges on withdrawals after the start of our experiment. Withdrawals remained free if the average quarterly balance (AQB) on the account was above INR 500, but customers were charged INR 1 per withdrawal if their AQB was between INR 200 and INR 500 and INR 2 per withdrawal if their AQB was less than INR 200. These charges were abandoned on July 1, 2014. From the endline survey we learn that customers did not realise the existence of temporary charges. We only got to know about it shortly before it was abandoned.

[5]Details are available on the PJYMD website: http://pmjdy.gov.in.

because the bank is too far away. Villagers usually withdraw the money at once shortly after a payment is made.

To obtain a sample that is stratified by gender, we approached people until we had selected six men and six women in each village. Three men and three women were randomly allocated to the treatment group, and the others to the control group.

We conducted a baseline survey at the respondent's home in the fall of 2013. Shortly after the interview, Basix Sub-K started the paperwork to open a BCSA account for each of the treated respondents. All of the accounts were activated by the spring of 2014. To make sure the respondents understood how to use their BCSA accounts, we organized a practical information session. We showed the treated respondents how to deposit and withdraw money, and demonstrated how the fingerprint recognition tool protects their savings. Therefore, the intervention is twofold: providing help with all the documentation required to open a bank account and providing training on how to use it.

Between February and May, and July and August 2014, we organized seventeen weekly interviews, which took place on the same day of the week at a centrally located room in the village. On average, the respondents needed about three hours to travel, wait their turn, be interviewed and go back home. To compensate them for their time, we paid INR 150 in a closed envelope at the end of each interview.

2.3 Data and Pre-Analysis Plan

We have four sources of data. First, the baseline survey included questions on the characteristics of the participants and their household members, as well as on the household's expenditures, investments, transfers, loans, and informal savings.

Second, Basix Sub-K gave access to all the transactions that were made during the survey period.

Third, inspired by Collins et al. (2009) and Dupas and Robinson (2013a) we used financial diaries. These weekly interviews provided detailed information on the incomes and expenditures of all the household members. The income sections covered wage labor, self-employment, the sale of goods, livestock, crops and forest products, renting out of assets and land, and public transfers. In addition to a

list of 195 consumption items for which we recorded the amounts purchased, the expenditure details included expenditure on business and agricultural inputs, and the rent of assets. We also collected details on loans, transfers and remittances. To gather this weekly information, we created a "dynamic" questionnaire, that compared the answer with values that were previously recorded. The enumerator did not see the expenses from previous weeks, but received a message asking him to double check with the respondent in case the amount entered differed a lot from previous values. If the information was correct, he had to provide an explanation for the exceptional value. Details about accounts, memberships of savings groups, outstanding loans, etc. were automatically shown, to make sure that the enumerator would remember to update the necessary information. We believe that this process greatly improved the quality of the data collected and minimized measurement errors.

Finally, we conducted an endline survey to update the baseline information.

Before we received the data, we registered a pre-analysis plan with the American Economic Association's registry for randomized control trials (Somville and Vandewalle, 2015). Deviations from the pre-analysis plan are discussed in Appendix C.

2.4 Baseline Characteristics and Balance Check

Table 1 presents the baseline characteristics that were identified as covariates in the pre-analysis plan. There are 204 respondents in the sample. The first column provides the means (and standard deviations) in the full sample and the second column the coefficient estimates (and standard errors) of the difference between the baseline means in the treatment and control group. All of the 21 coefficient estimates are small and only one is significantly different from zero at 10%. This suggests that the randomization was successful at making the treatment orthogonal to observed baseline characteristics.[6]

As we stratified the sample on gender, 50% of the respondents are women. In terms of demographic characteristics, respondents are mainly Other Backward

[6]The Tables 15 and 16 in online Appendix B show that the outcome variables are balanced at baseline as well. All of the 28 coefficient estimates are small and only one is significantly different from zero at 10%.

Table 1: Summary Statistics and Balance Check of Baseline Characteristics

	Mean (Std. dev.) (1)	Coefficient on *New account* (Std. errors) (2)
New account (%)	50.00	
	(50.12)	
Woman (%)	50.00	0.00
	(50.12)	(0.07)
Caste category: ST (%)	16.18	0.03
	(36.91)	(0.05)
Caste category: SC (%)	15.69	-0.00
	(36.46)	(0.05)
Caste category: OBC (%)	67.65	-0.02
	(46.90)	(0.07)
Caste category: FC (%)	0.49	-0.01
	(7.00)	(0.01)
Literate (%)	40.69	0.07
	(49.25)	(0.07)
Married (%)	87.75	0.03
	(32.87)	(0.05)
Age	45.44	-0.52
	(13.76)	(1.93)
Wage labor in agriculture (%)	30.88	-0.07
	(46.31)	(0.06)
Wage labor outside agriculture (%)	13.73	-0.02
	(34.50)	(0.05)
Self-employed in agriculture (%)	44.61	0.07
	(49.83)	(0.07)
Self-employed outside agriculture (%)	0.98	0.02
	(9.88)	(0.01)
Land (acres)	1.10	0.28
	(1.59)	(0.22)
Dwelling type: katcha (%)	55.39	-0.07
	(49.83)	(0.07)
Accounts held (#)	1.06	-0.12
	(0.59)	(0.08)
Savings groups (#)	0.14	-0.01
	(0.35)	(0.05)
Takes savings decision at home (%)	84.80	-0.01
	(35.99)	(0.05)
Trusts the bank agent and banks (%)	68.63	-0.04
	(46.51)	(0.07)
Impatient (%)	44.12	-0.04
	(49.77)	(0.07)
Distance to the bank agent (km)	0.31	0.05*
	(0.21)	(0.03)
Weeks interviewed (#)	13.16	0.56
	(3.68)	(0.52)
Observations	204	204

The first column reports means (and standard deviations), and the second column shows the coefficient estimates (and standard errors) of the difference between the means in the treatment and control groups. *** significant at 1 percent, ** significant at 5 percent, * significant at 10 percent

Classes[7], 41% is literate, 88% married, the average age is 45, and the majority is employed in the agricultural sector (the omitted category is being unemployed). The sample is quite poor: participants own about one acre of land and 55% live in a house that is made of mud (katcha). On average, respondents hold one other account with either a post office, cooperative or formal bank. These accounts were opened to receive public transfers, or to be paid for paddy or other grains (see Section 2.2). One out of seven participants is a member of an informal savings group, a large majority participates in their household's decision making with respect to where and how much to save and 68% trust both their bank agent and bankers in general.[8] Finally, 44% of the participants are impatient (they prefer money today instead of a larger amount in one week)[9] and the average distance from the house to the bank agent is about 300 meters as the crow flies. The last variable in the Table is not measured at baseline but shows that the average respondent attended 13 interviews.

2.5 Attrition

We intended to work in 18 different villages. However, shortly after the baseline survey, one bank agent stopped his banking activities because they were not as profitable as his other business. Because there is only one bank agent per village, we had to exclude the village from our experiment. As the bank agent's decision was unrelated to our study, the attrition is orthogonal to the experimental treatment assignment.

Of the 204 respondents in our study, only three never attended the weekly interviews. As shown in Table 1, the average person was interviewed 13.2 times and there is no statistical difference between the treated and control. Furthermore, Table 10 in Appendix B shows we cannot predict well the number of weekly interviews a respondent attended based on observables: the R-squared is only 0.15.

[7]Castes are classified in the following categories: ST (Scheduled Tribe), SC (Scheduled Caste), OBC (Other Backward Classes), and FC (Forward Caste).

[8]The respondents were asked whether they trust the bank agent and banks in general. The trust index equals one if the answer to both questions is "quite a bit of trust" or "a lot of trust".

[9]We measure impatience based on hypothetical time-preference questions. Respondents are impatient if they prefer to receive INR 100 today instead of INR 200 in one week and INR 100 in one week instead of INR 200 in two weeks.

The final sample consists of 2685 interviews of 201 individuals over 17 weeks.

3 Results

In Section 3.1, we provide details on account usage by the treated, before we estimate the impact of providing a bank account on savings by the respondent and other household members in Section 3.2. The treated respondents have higher total savings (as measured by the sum over all their financial assets), but the increase is not sufficiently large to impact the total savings at the household level. Therefore, it is not surprising that there is no effect on other household level outcomes, such as expenditures, loans, transfers and income (Section 3.3). However, Section 3.4 demonstrates an important impact on consumption smoothing. Indeed, following Townsend (1994) and Morten et al. (2017), we presume that expenditures should not correlate with weekly variations in income if they are perfectly smoothed over time. While the control's food expenditures - and in particular expenditures on perishable food - vary importantly with income, the treated households are able to keep them constant over time. In section 3.5 we focus on food consumption: we measure the caloric value of the household expenditures and we show that the treatment also helps to smooth the calories purchased and available to the household each week. Finally, Section 3.6 shows this is possible thanks to pro-cyclical saving on the BCSA account: treated households save more when income is higher, while the savings of control households do not vary with income.

3.1 Account Usage by the Treated

We first use the administrative data to provide details on account usage. The treated respondents used their account actively during the 17 weeks of the experiment: 62% deposited at least once and the average person made 3 deposits. As they withdrew less often than they deposited, there is a gradual increase in the balance over the length of the experiment. This can be seen in Figure 1. The horizontal axis shows the number of weeks since the start of the experiment, and the vertical axis the balance in the BCSA account. The average balance of the treated increases steadily during the first 13 weeks. It then stabilizes slightly below INR 300. We note that the average balance does not change after the end

of the study (week 24) and is at least stable until week 36 (the last data points that we obtained). We also show the average balance of the control group, because two respondents of that group opened an account themselves and made some transactions.

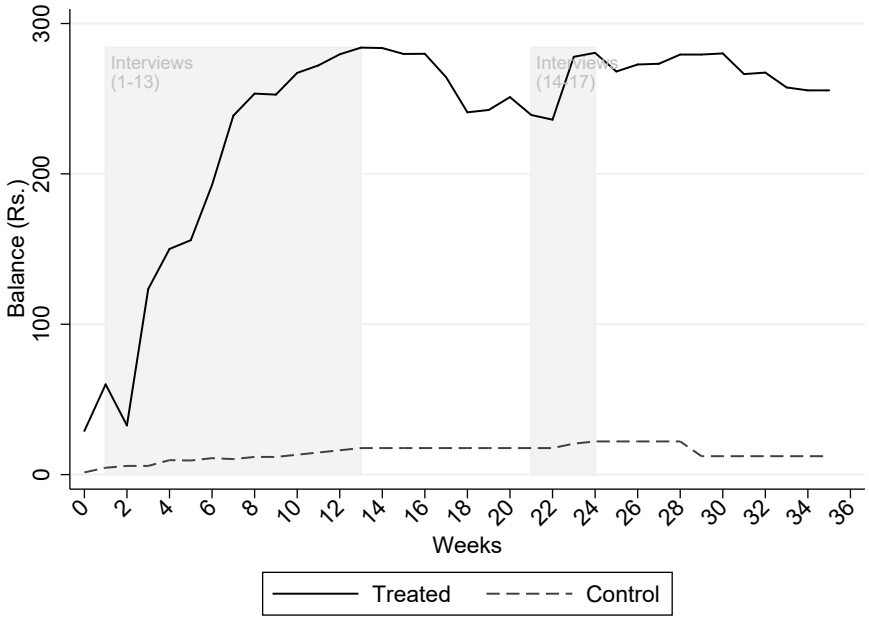

Figure 1: Evolution of the average bank account balance over time.

Next, we follow Prina (2015) and Dupas et al. (2018) by examining the correlates of take-up and usage in the treatment group. We estimate the impact on whether or not the respondent is an "active user", i.e. makes at least two deposits during the 17 weeks of the experiment, and on the total amount deposited during those weeks. In line with their specifications, we also show the results using an inverse hyperbolic sine transformation of the total amount deposited.[10]

The results are comparable to previous findings. Table 2 shows the R-squared is low, indicating we cannot predict well account usage based on the pre-planned observables. The only significant predictors are patience and trust. Patient respondents are more likely to be active users, but the total amount deposited does

[10]As explained in Ravallion (2017) and Bellemare and Wichman (forthcoming), the inverse hyperbolic sine transformation approximates a log transformation, but is also defined for non-positive values.

Table 2: Account Usage by the Treated

	Active	Total amount deposited	
	user	Level	Transformed
	(1)	(2)	(3)
Woman	0.16	52.2	0.56
	(0.13)	(184.0)	(0.86)
Caste category: SC	-0.08	97.9	0.25
	(0.23)	(317.1)	(1.49)
Caste category: OBC	-0.08	315.7	0.77
	(0.15)	(204.0)	(0.96)
Literate	-0.06	-131.7	-0.51
	(0.13)	(184.4)	(0.87)
Married	-0.10	-166.6	-0.78
	(0.19)	(263.2)	(1.24)
Age	0.00	-4.7	-0.03
	(0.00)	(6.9)	(0.03)
Wage labor in agriculture	-0.18	-105.0	-0.80
	(0.23)	(322.6)	(1.52)
Wage labor outside agriculture	0.07	421.6	1.56
	(0.24)	(340.7)	(1.60)
Self-employed in agriculture	-0.10	-191.4	-0.58
	(0.23)	(317.7)	(1.49)
Self-employed outside agriculture	0.59	-65.5	2.48
	(0.43)	(596.3)	(2.80)
Land (acres)	-0.02	-23.3	-0.17
	(0.04)	(50.0)	(0.24)
Dwelling type: katcha	0.03	113.5	0.89
	(0.11)	(156.0)	(0.73)
Accounts held (#)	0.14	256.5	0.79
	(0.11)	(156.7)	(0.74)
Savings groups (#)	-0.06	77.7	-0.58
	(0.17)	(237.6)	(1.12)
Takes savings decision at home	-0.08	-400.6*	-0.93
	(0.16)	(219.5)	(1.03)
Trusts the bank agent and banks	0.04	328.0**	1.37*
	(0.11)	(158.6)	(0.75)
Impatient	-0.24**	-246.6	-1.09
	(0.12)	(164.5)	(0.77)
Distance to the bank agent (km)	0.09	-432.6	-0.15
	(0.29)	(403.4)	(1.90)
R^2	0.14	0.24	0.18
Mean dependent (control)	0.5	428.2	4.0
Observations	102	102	102

In column (1) the dependent variable indicates the respondent is an "active user" (i.e. made at least two deposits during the 17 weeks of the experiment), in column (2) the total amount deposited, and in column (3) the hyperbolic sine transformation of the total amount deposited during the experiment. *** significant at 1 percent, ** significant at 5 percent, * significant at 10 percent

not differ significantly from impatient respondents. Respondents who trust the bank agent and banks have a higher balance on their account.[11]

3.2 The Impact on Savings

To estimate the impact of being provided a bank account, we use information from the weekly interviews and from the administrative data. Our main specification is a pooled panel model on a sample of 2685 interviews taken from 201 individuals over 17 weeks:[12]

$$Y_{ikt} = \alpha_0 + \alpha_1 T_{ik} + \alpha_2 F_{ik} + \alpha_3 X_{ik} + V_k + W_t + \epsilon_{ikt} \quad (1)$$

Y_{ikt} is the outcome variable of interest for individual (or household) i in village k measured during the interview of week t, T_{ik} is a dummy indicating the respondent is treated and F_{ik} that she is a woman (the variable on which we stratified the sample). X_{ik} is the vector of baseline characteristics that were presented in Table 1. As we are mainly interested in the impact at the household level, we present results without these controls in the main text. The results are similar though when they are included.[13] Finally, V_k and W_t are village and time fixed effects, and ϵ_{ikt} is the error term.[14] The standard errors are clustered at the individual (and thus household) level.

Table 3 provides the impact on the respondent's personal savings (panel A and B) and on the total household savings (panel C and D). For each asset, we present the impact on the amount deposited during the seven days that precede the interview and on the balance. As mentioned in Section 3.1, we use the inverse hyperbolic sine transformation of the dependent variable (Table 12 in Appendix B shows the corresponding results without transformation).

The respondent has four savings tools: (1) the BCSA account, (2) self-help groups (SHGs) and other informal neighborhood groups, (3) agricultural cooper-

[11] This finding is in line with what has been observed in Mehrotra et al. (forthcoming).

[12] The weekly interviews were delayed in some villages to facilitate a close follow-up of the enumerators in the first couple of weeks. As a result, we did 17 interviews in 11 villages, 16 interviews in two villages, 13 in three villages, and 11 in the final one.

[13] The results that include all the individual controls are presented in Table 11 in Appendix B.

[14] As there is only one banker per village, the village fixed effects also absorb all banker fixed effects.

Table 3: Treatment Effect on Savings Behavior

	BCSA account	SHGs	Cooperatives	Post office and other accounts	Cash at home	Money guarded	Jewelry, grain and livestock	Total
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Deposits made by the respondent								
New account	0.9***	0.0		-0.0				0.9***
	(0.1)	(0.1)		(0.0)				(0.1)
R^2	0.18	0.07		0.02				0.15
Mean dependent (control)	0.1	0.2		0.0				0.2
Panel B: The respondent's stock of savings								
New account	2.82***	-0.06	-0.31	0.08				1.04**
	(0.25)	(0.39)	(0.38)	(0.30)				(0.44)
R^2	0.47	0.20	0.21	0.30				0.17
Mean dependent (control)	0.1	1.5	1.5	2.0				4.3
Panel C: Total amount deposited by household members								
New account	0.88***	0.02		0.01				0.86***
	(0.11)	(0.10)		(0.02)				(0.14)
R^2	0.17	0.04		0.04				0.12
Mean dependent (control)	0.1	0.3		0.0				0.4
Panel D: Total stock of savings of household members								
New account	2.64***	-0.13	0.08	0.05	0.14	-0.08**	0.04	0.30
	(0.26)	(0.52)	(0.49)	(0.33)	(0.19)	(0.03)	(0.54)	(0.26)
R^2	0.47	0.09	0.10	0.33	0.10	0.07	0.14	0.16
Mean dependent (control)	0.3	2.9	2.5	2.6	5.7	0.1	8.2	9.4
Observations	2685	2685	2685	2685	2685	2685	2685	2685

The table presents the impact on the respondent's personal savings (panel A and B) and on the total household savings (panel C and D). For each asset, we present the impact on the amount deposited during the seven days that precede the interview date and the balance. We use a log specification of the outcome variables by implementing an inverse hyperbolic sine transformation. The different savings tools are: (1) the BCSA account, (2) SHGs and other informal neighborhood groups, (3) agricultural cooperatives, (4) the post office and other accounts, (5) cash at home, (6) money guarded by others, (7) the total stock of jewelry, grain and livestock, and (8) the total over all the tools. All columns include time and village fixed effects and control for gender. Standard errors are clustered at the household level. *** significant at 1 percent, ** significant at 5 percent, * significant at 10 percent.

atives and (4) the post office and other accounts. There are three additional tools for which we only have information at the household level: (5) cash at home, (6) money guarded by others and (7) the total stock of jewelry, grain and livestock. For these three tools, we asked about the stock of savings, but not about the weekly deposits.

Receiving a BCSA account has a significant positive impact on the respondent's deposits into and savings on the account. As the coefficients are systematically close to zero for the flow and stock of other financial assets, there is a positive impact on the respondent's total financial savings (column 8).[15] Few other household members opened a BCSA account. Therefore, it is not surprising there is a significant positive impact on the savings on BCSA accounts held by *any* household member. The increase is not sufficient though to impact the total savings at the household level, as can be seen from the last column in panel D.[16]

3.3 Impact on Expenditures, Transfers and Revenues

We now examine the impact on expenditures, transfers and revenues. Table 4 shows a precisely estimated zero impact on the expenditures on (1) frequent purchases, (2) temptation goods, (3) non-frequent products, (4) investments, (5) the total over these goods and (6-8) food. Apart from the additional "food" categories, the classification is exactly the same as in Somville and Vandewalle (2018): frequent purchases is the sum of expenditures on goods that are bought frequently by the average household, and temptation goods are products that are not *survival necessities* (Banerjee and Mullainathan, 2010).[17] "Food" is the sum of expenditures over all the items that are edible, independent of whether these are bought frequently, infrequently or can be classified as temptation goods (such as snacks from the market). We further split up food into items that have to be consumed within a short period of time (perishable), and items that can be stored (non-

[15] As mentioned in Section 2.2, villagers cannot deposit with cooperatives and they can - but rarely do so - into other accounts.

[16] This is not due to the negative impact on money guarded by others, as only eight households use this service over a total of 19 weeks.

[17] Frequent purchases includes expenses on grains, cereals, pulses, lentils, milk products, edible oil, vegetables, fruit, sugar, salt, spices, fuels, soap and washing powder; and temptation goods on pan, alcohol, tobacco, drinks and snacks from the market, hair oil, lotion and perfumes.

perishable).[18]

Table 4: Treatment Effect on Household Expenditures

	Frequent	Temptation goods	Non-frequent	Investments	Total	All food	Perishable food	Non-perishable food
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
New account	0.06	0.02	-0.00	-0.02	0.05	0.08	0.10	0.07
	(0.09)	(0.16)	(0.20)	(0.22)	(0.11)	(0.10)	(0.11)	(0.11)
R^2	0.12	0.11	0.08	0.06	0.10	0.12	0.12	0.08
Mean dependent (control)	6.1	4.2	4.9	1.5	7.0	6.1	5.2	5.2
Observations	2685	2685	2685	2685	2685	2685	2685	2685

The dependent variables are the hyperbolic sine transformations of expenditures on (1) frequent purchases, (2) temptation goods, (3) non-frequent products, (4) investments, (5) the total over these goods, (6) all food and (7) perishable and (8) non-perishable food. All columns include time and village fixed effects and control for gender. Standard errors are clustered at the household level. *** significant at 1 percent, ** significant at 5 percent, * significant at 10 percent.

Next, Table 5 shows that the net inflow of loans and transfers and the total household income do not differ between the treated and control. The net inflow of loans is the total amount borrowed minus the total amount lent, plus the net amount of reimbursements received. Similarly, the net inflow of transfers is the total amount received, minus the total amount given. The final variable - total income - sums the revenues from eight different sources: wage labor, self-employment, the sale of goods, livestock, crops and forest products, renting out of assets and land, and public transfers.

Finally, Table 6 provides additional details about the eight different sources of income. Column 1 shows the control group's mean revenue, column 3 the proportion of observations with a positive amount in the control group, and the columns 2 and 4 the impact of having access to a bank account on the mean income and on the proportion of positive amounts respectively (coefficient α_1 in equation 1). Panel A reveals two important facts. First, there is no significant impact of providing access to a bank account on any of the income sources at the household

[18]To define perishable foods, we asked our local research assistant to list all the food that cannot be kept longer than one week outside a fridge, as only one household owns one.

Table 5: Treatment Effect on Loans, Transfers and Total Income

	Loans	Transfers	Total income
	(1)	(2)	(3)
New account	-0.01	0.07	0.07
	(0.17)	(0.11)	(0.12)
R^2	0.04	0.09	0.15
Mean dependent (control)	-0.5	-0.8	6.3
Observations	2685	2685	2685

The table presents the impact on the inverse hyperbolic sine transformation of loans, transfers and the total household income. All columns include time and village fixed effects and control for gender. Standard errors are clustered at the household level. *** significant at 1 percent, ** significant at 5 percent, * significant at 10 percent.

level. Second, wage employment is the most important and most regular source of income. Indeed, the average household receives revenues from wage employment in 88% of the weeks. The second most important source of income is the sale of agricultural products, which provides revenues in 7.5 percent of the weeks only. Panel B provides information on the sources of income that can be directly linked to the respondent, namely wage employment and self-employment. The impact is not significant, suggesting that access to a bank account does not influence the respondent's income either.[19] These results are important for the analysis in the next section.

3.4 Consumption Smoothing

Does access to a bank account enhance consumption smoothing over time? To answer this question, we compare the correlation between weekly income and expenditures for the treated and control. This approach has been used by Townsend (1994) and Morten et al. (2017) among others and is based on the fact that expenditures should not correlate with weekly variations in income if they are perfectly smoothed over time. Compared to the existing literature, our data is particularly informative as it allows the calculation of the correlation within households across

[19]On the contrary, Callen et al. (forthcoming) found that access to doorstep banking increased wages in Sri Lanka.

Table 6: Treatment Effect on the Different Sources of Income

	Control mean (Std. dev.) (1)	Coefficient on *New account* (Std. errors) (2)	Positive amount (control) (Std. dev.) (3)	Coefficient on *New account* (Std. errors) (4)
Panel A: Income at the household level				
Wage employment	5.7	0.11	87.4	1.27
	(2.4)	(0.11)	(33.2)	(1.10)
Agriculture	0.6	-0.01	7.8	-0.22
	(2.0)	(0.13)	(26.8)	(1.78)
Public transfers	0.5	-0.05	5.9	-0.87
	(1.8)	(0.08)	(23.6)	(1.05)
Self-employment	0.5	-0.18	6.5	-2.38
	(1.9)	(0.20)	(24.6)	(2.54)
Livestock	0.2	-0.01	2.7	-0.01
	(1.0)	(0.12)	(16.3)	(1.75)
Sale of goods	0.1	-0.01	0.9	-0.01
	(0.7)	(0.03)	(9.5)	(0.37)
Rents	0.0	-0.03	0.6	-0.31
	(0.6)	(0.03)	(7.8)	(0.31)
Forestry	0.0	0.01	0.1	0.15
	(0.2)	(0.01)	(2.8)	(0.19)
Panel B: Income of the respondent				
Wage employment	5.1	0.15	83.3	1.30
	(2.4)	(0.09)	(37.3)	(1.19)
Self-employment	0.2	0.07	2.3	0.77
	(1.1)	(0.13)	(14.9)	(1.73)
Observations		2685		2685

The table presents the impact on the different sources of income at the household level (panel A) and on two sources of income that can directly be linked to the respondent (panel B). For each source of income, it provides the mean revenue of the control in column (1), the proportion of observations with a positive amount in the control group in column (3), and the impact of having access to a bank account on the inverse hyperbolic sine transformation of income and on the proportion of positive amounts in the columns (2) and (4) respectively. Columns (2) and (4) include time and village fixed effects and control for gender. Standard errors are clustered at the household level. *** significant at 1 percent, ** significant at 5 percent, * significant at 10 percent.

time. We estimate three different specifications:

$$Y_{jt} = \beta_0 + \beta_1 Income_{jt} + \beta_2 Income_{jt} * T_j + H_j + W_t + \theta_{jt} \quad (2)$$

$$Y_{jt} = \gamma_0 + \gamma_1 I_{(Income_{jt} < median_j)jt} + \gamma_2 I_{(Income_{jt} < median_j)jt} * T_j + H_j + W_t + \theta_{jt} \quad (3)$$

$$\begin{aligned} Y_{jt} = & \delta_0 + \delta_1 I_{(i < median_i)jt} + \delta_2 I_{(i < median_i)jt} * T_j + \\ & \delta_3 I_{(-i < median_{-i})jt} + \delta_4 I_{(-i < median_{-i})jt} * T_j + H_j + W_t + \theta_{jt} \end{aligned} \quad (4)$$

Y_{jt} measures the expenditures on different categories of goods by household j during the seven days that precede the interview of week t. In equation 2, $Income_{jt}$ is the household's total wage income over the same period. We focus on wage income because it is the most regular source of revenues and can easily be adjusted in case of need. As we use the hyperbolic sine transformation for both the expenditures and the measures of income, the coefficients reflect the income elasticity of expenditures. To further minimize the potential influence of outliers, we replace the continuous measure with a dummy indicating the weekly wage income is below the household's median wage income (Equation 3). Finally, in Equation 4, we differentiate between income earned by respondent i and by other household members $-i$. To do so, we include two dummies indicating the respondent's and the other household members' weekly incomes are below their respective median wage income. T_j indicates the household is treated (because respondent i received a bank account), and H_j and W_t are household and time fixed effects respectively. The inclusion of household fixed effects - which control for all the household characteristics that are constant over time - greatly reduces the possibility of endogeneity biases in the estimates. A bias may still occur though if the treatment impacts weekly income. The Tables 5 and 6 in Section 3.3 show this is not the case.

Each panel in Table 7 presents the results for a different measure of income. Panel A shows total wage income is positively correlated with different expenditures in the control group: on average, a 10% decrease in total wage income corresponds to a 0.4% decrease in frequent purchases and food expenditures, and a 0.3% decrease in total expenditures. On the contrary, the correlation is close to zero for the treatment households. If we further split food expenditures into items that are perishable and non-perishable, we see the difference is driven by

Table 7: Consumption Smoothing at the Household Level

	Frequent	Temptation goods	Non-frequent	Investments	Total	All food	Perishable food	Non-perishable food
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Wage income (continuous)								
Income	0.04***	0.02	0.04*	0.01	0.03**	0.04***	0.05***	0.03
	(0.01)	(0.02)	(0.03)	(0.03)	(0.01)	(0.01)	(0.01)	(0.02)
New account x income	-0.05***	-0.02	-0.05	0.02	-0.03*	-0.05***	-0.05***	-0.03
	(0.02)	(0.02)	(0.04)	(0.04)	(0.02)	(0.02)	(0.02)	(0.03)
Total effect for treated hh	-0.01	-0.00	-0.00	0.02	-0.00	-0.01	-0.00	-0.00
	(0.01)	(0.02)	(0.03)	(0.03)	(0.01)	(0.01)	(0.01)	(0.02)
Panel B: Wage income (categorized)								
Income low	-0.20***	-0.18**	-0.23*	0.01	-0.10	-0.18***	-0.25***	-0.15*
	(0.06)	(0.08)	(0.12)	(0.16)	(0.06)	(0.06)	(0.06)	(0.09)
New account x income low	0.22***	0.15	0.19	-0.20	0.07	0.22***	0.23***	0.13
	(0.08)	(0.10)	(0.18)	(0.21)	(0.08)	(0.08)	(0.08)	(0.12)
Total effect for treated hh	0.02	-0.02	-0.04	-0.19	-0.03	0.03	-0.02	-0.01
	(0.05)	(0.07)	(0.14)	(0.14)	(0.06)	(0.06)	(0.04)	(0.08)
Panel C: Wage income (categorized for respondent and for other household members)								
Respondent low	-0.15*	-0.07	0.17	0.17	0.04	-0.12	-0.18**	-0.07
	(0.08)	(0.10)	(0.13)	(0.19)	(0.08)	(0.07)	(0.08)	(0.12)
New account x resp low	0.20**	0.17	0.13	-0.07	0.13	0.22**	0.21**	0.13
	(0.09)	(0.12)	(0.18)	(0.25)	(0.10)	(0.09)	(0.09)	(0.14)
Others low	-0.19**	-0.31***	-0.47**	-0.23	-0.25***	-0.29***	-0.28***	-0.25**
	(0.08)	(0.08)	(0.19)	(0.27)	(0.09)	(0.09)	(0.09)	(0.10)
New account x others low	0.06	0.19	0.01	-0.07	0.06	0.15	0.15	0.11
	(0.10)	(0.19)	(0.29)	(0.35)	(0.12)	(0.11)	(0.11)	(0.16)
Total effect for control hh	-0.33***	-0.37***	-0.30	-0.06	-0.22**	-0.41***	-0.45***	-0.32**
	(0.11)	(0.13)	(0.23)	(0.34)	(0.11)	(0.12)	(0.12)	(0.15)
Total effect for treated hh	-0.07	-0.01	-0.15	-0.20	-0.02	-0.04	-0.09	-0.08
	(0.07)	(0.19)	(0.27)	(0.27)	(0.10)	(0.09)	(0.08)	(0.15)
Mean dependent (control)	6.1	4.2	4.9	1.5	7.0	6.1	5.2	5.2
Observations	2685	2685	2685	2685	2685	2685	2685	2685

The dependent variables are the hyperbolic sine transformations of expenditures on (1) frequent purchases, (2) temptation goods, (3) non-frequent products, (4) investments, (5) the total over these goods, (6) all food and (7) perishable and (8) non-perishable foods. All columns include household and time fixed effects. Standard errors are clustered at the household level. *** significant at 1 percent, ** significant at 5 percent, * significant at 10 percent.

food that has to be consumed within a short period of time. Indeed, there is no impact on non-perishable food that can either be consumed directly or stored for tight weeks. Taken together, these results suggest the treated respondents' diet may be more balanced over time. The results are robust to replacing the continuous wage measure by a dummy (Panel B): when the weekly wage income is below the household's median wage income, the expenditures on frequent and on perishable food decrease by 22% ($e^{0.2} - 1$) and 28% ($e^{0.25} - 1$) respectively for the control, but not for the treated households. Finally, in Panel C, we differentiate between income earned by the respondent and income earned by other household members and show that the observed correlation between income and expenditures in the control group is driven by the respondent's income. Indeed, the impact of income earned by other household members does not differ between the treated and control households.

3.5 Nutrition Smoothing

Malnutrition is still severe in India. According to the World Health Organization, "India contributes a third of the global burden of undernutrition."[20] In particular, the latest Global Nutrition Report emphasizes the importance of anemia and stunting: around 38% of children below five are stunted and around 50% of women of reproductive age suffer from anemia (Global Nutrition Report, 2018).

The households in our sample live close to subsistence level (95% are on the official "Below Poverty Line" list) and smoothing consumption and nutrition is therefore a first-order concern. To further investigate plausible positive welfare effects of access to banking, we estimate its impact on nutrition smoothing.[21] Large variation in calories obtained through perishable food is evidence against consumption smoothing over time. On the contrary, buying more calories in the form of non-perishable food when income peaks is a plausible consumption smoothing strategy, as these goods can be stored until income is low.

Table 8 presents the treatment impact on the total amount of calories purchased, and on the calories purchased through perishable and non-perishable food

[20] Source: www.searo.who.int/india/topics/nutrition/en/, last visited on 03.06.2019.

[21] To calculate the caloric value of the purchases, we use the *Indian Food Composition Tables 2017* produced by the National Institute of Nutrition (Indian Council of Medical Research).

separately. As for the previous results, we use the inverse hyperbolic sine transformation for the dependent variables. The results are in line with our previous findings. The new account does not affect the mean level of calories purchased (panel A) but it significantly improves the smoothing of calories over time (panel B, C and D). In the control group, a one percent decrease in weekly wage earnings translates into a decrease of around ten percent in the amount of calories purchased, and a decrease of around eight percent in the calories purchased as perishable food. For the treated households, the calories purchased do not vary with income. There is weaker evidence that households purchase fewer calories as non-perishable food when income drops, but this consumption smoothing strategy does not differ between the treated and control households.

In the next section, we show the bank account enhanced the ability of treated households to smooth consumption over time thanks to its safekeeping function. We also show that the treated households rely less on informal transfers.

3.6 How do Treated Households Smooth Consumption?

Providing access to a bank account does not alter average savings and expenditures at the household level (Tables 3 and 4), but it allows households to better smooth consumption and nutrition over time (Tables 7 and 8). In this section we want to better understand how the treatment affects consumption smoothing.

First, households can smooth consumption by saving more when income is higher. To test this hypothesis, we estimate the equations 2 to 4, where Y_{jt} now measures the change in household j's savings in the seven days that precede the interview of week t. The change in savings is the difference between the deposits and the withdrawals made by any household member on the savings tools they own. Table 9 provides the results for savings in the BCSA account and Table 13 in Appendix B for all the other savings tools: SHGs, agricultural cooperatives, the post office and other accounts. For completeness, Table 14 in Appendix B reports the results for the stocks of savings households may use, namely cash at home, money guarded by others and the total stock of jewelry, grain and livestock.

Second, households can smooth consumption by relying on informal insurance. As mentioned in the introduction, there is an extensive literature that focuses on

Table 8: Calories purchased

	All food	Perishable food	Non-perishable food
	(1)	(2)	(3)
Panel A: Impact on calories purchased			
New account	0.02	0.10	-0.05
	(0.17)	(0.18)	(0.25)
Panel B: Wage income (continuous)			
Income	0.10***	0.08***	0.09
	(0.03)	(0.03)	(0.06)
New account x	-0.11***	-0.09***	-0.02
income	(0.04)	(0.03)	(0.07)
Total effect for	-0.01	-0.01	0.07
treated hh	(0.02)	(0.02)	(0.06)
Panel C: Wage income (categorized)			
Income low	-0.43***	-0.47***	-0.46*
	(0.16)	(0.11)	(0.25)
New account x	0.44**	0.44***	0.12
income low	(0.19)	(0.14)	(0.33)
Total effect for	0.00	-0.03	-0.34
treated hh	(0.11)	(0.09)	(0.22)
Panel D: Wage income (categorized for respondent and other hh members)			
Respondent	-0.49**	-0.35***	-0.37
low	(0.19)	(0.13)	(0.31)
New account x	0.52**	0.36**	0.21
resp low	(0.22)	(0.16)	(0.37)
Others low	-0.33	-0.43**	-0.50*
	(0.21)	(0.17)	(0.26)
New account x	0.21	0.31	-0.22
others low	(0.26)	(0.19)	(0.47)
Total effect for	-0.82***	-0.78***	-0.87**
control hh	(0.29)	(0.22)	(0.39)
Total effect for	-0.08	-0.11	-0.88*
treated hh	(0.21)	(0.12)	(0.47)
Mean dependent (control)	11.7	9.4	10.6
Observations	2685	2685	2685

The dependent variables are the hyperbolic sine transformations of the calories purchased in total (1), on perishable food (2) and on non-perishable food (3). Panel A includes controls for gender and village and time fixed effects. Panel B, C and D include household and time fixed effects. Standard errors are clustered at the household level. *** significant at 1 percent, ** significant at 5 percent, * significant at 10 percent.

informal insurance in low- and middle-income countries. To understand its importance in our context, we replace the dependent variable by the inverse hyperbolic sine transformation of the net amount of transfers received by the household (the difference between money that all the household members received and the money that they gave in a week).

Table 9 shows the treated and control households use different tools to smooth consumption. The correlation between wage income and changes in savings in the BCSA account is positive and highly significant for the treated, but nearly zero for the control. On the other hand, the correlation between wage income and transfers received is negative and highly significant for the control, but nearly zero for the treated. The effects are important: a ten percent higher income is associated with 0.7 percent higher savings in the BCSA account for the treated and 1.3 percent lower transfers received by the control. Tables 9 and 13 in Appendix B show that the correlation between the different measures of wage income and the other savings tools does not differ between the treated and control households.

In conclusion, the results suggest the treated households cope with income fluctuations through savings rather than through transfers, and that this new savings tool allows them to smooth consumption better than the control households.

Table 9: Smoothing through Savings

	BCSA account (1)	Transfers (2)
Panel A: Wage income (continuous)		
Income	0.00	-0.13***
	(0.01)	(0.03)
New account x income	0.07**	0.12***
	(0.03)	(0.05)
Total effect for treated hh	0.08**	-0.01
	(0.03)	(0.04)
Panel B: Wage income (categorized)		
Income low	0.01	0.61***
	(0.03)	(0.17)
New account x income low	-0.16	-0.76***
	(0.15)	(0.22)
Total effect for treated hh	-0.15	-0.15
	(0.14)	(0.15)
Panel C: Wage income (categorized for respondent and for other hh members)		
Respondent low	-0.02	0.28
	(0.04)	(0.21)
New account x resp low	-0.42**	-0.28
	(0.16)	(0.24)
Others low	0.01	0.57**
	(0.03)	(0.27)
New account x others low	-0.31	-0.58
	(0.23)	(0.46)
Total effect for control hh	-0.01	0.85**
	(0.05)	(0.34)
Total effect for treated hh	-0.73**	-0.01
	(0.29)	(0.41)
Mean dependent (control)	0.1	-0.8
Observations	2685	2685

The dependent variables are the hyperbolic sine transformations of the difference between deposits and withdrawals into the BCSA account and of the net transfers received by the household. All columns include household and time fixed effects. Standard errors are clustered at the household level. *** significant at 1 percent, ** significant at 5 percent, * significant at 10 percent.

4 Conclusions

A few papers study the impact of providing access to a bank account. While most of them observe some impact on savings, the average impact on expenditures and related variables is limited. We confirm these findings for a representative sample of unbanked villagers in rural India. In addition to a "traditional" endline survey, we gathered highly frequent data up to six months after the accounts were opened, in the form of financial diaries. This allowed us to observe weekly changes in savings and consumption within households over time, and led to an important conclusion: while the control households partially smooth consumption through transfers, the treated save pro-cyclically on the newly received account, which allows the them to better smooth consumption (and nutrition) over time. As such, our experiment bridges an important gap between two major strands of literature, the impact of banking on the one hand and its role in mitigating risk and facilitating consumption smoothing on the other hand. Indeed, the existing experiments on access to banking provide limited insights on consumption smoothing, and papers that link frictions in the savings and credit market with risk mitigation lack exogenous variation in access to financial services.

Our results are important given the attention that has been given to financial inclusion and its potential benefits by the international community and several governments. While the existing studies reported mixed effects on average outcomes, our study shows that access to banking can reduce the volatility of expenditures even without changing mean expenditures. In this perspective, simplifying access to a convenient savings tool is an important development strategy.

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Appendix A: Study Area

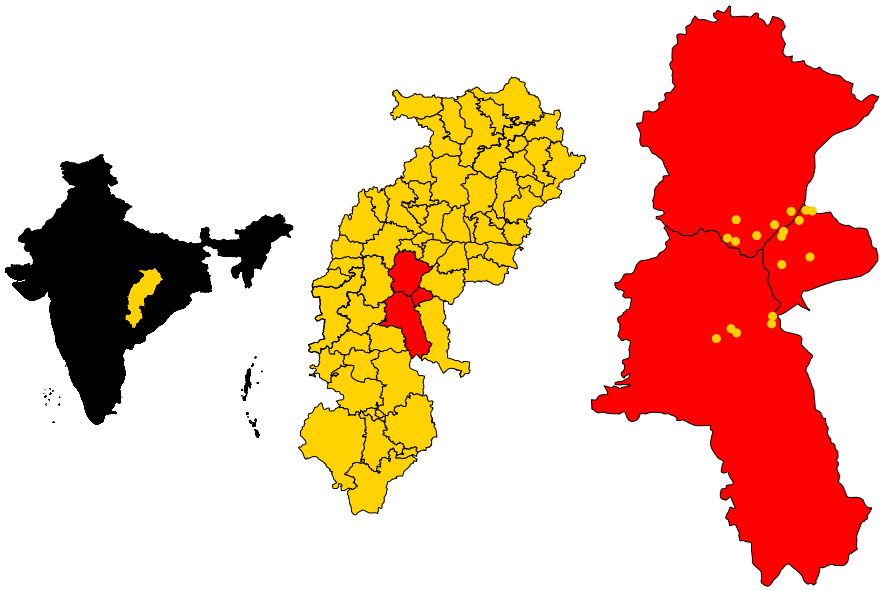

Figure 2: Study Area

Appendix B: Additional Results and Balance Checks

Additional Results

Table 10 examines whether we can predict the number of weekly interviews a respondent attends. To do so, we run a simple OLS regression:

$$Y_i = \gamma_0 + \gamma_1 X_i + \epsilon_i$$

where Y_i is the number of weekly interviews respondent i attended and X_i the characteristics that were presented in Table 1. The standard errors are calculated using nonparametric bootstrapping. Few observables are correlated with the number of interviews, and the R-squared is only 0.15.[22]

[22]The results are similar when we predict the number of interviews a respondent missed compared to the maximum number of interviews organized in the village.

Table 10: Prediction of the Number of Weekly Interviews Attended

	Number of weekly interviews attended (1)
New account	0.5
	(0.5)
Woman	0.2
	(0.6)
Caste category: SC	2.9***
	(1.0)
Caste category: OBC	1.1
	(0.7)
Caste category: FC	-4.5
	(3.8)
Literate	0.2
	(0.6)
Married	0.1
	(0.9)
Age	0.0
	(0.0)
Wage labor in agriculture	-0.6
	(1.0)
Wage labor outside agriculture	-0.6
	(1.2)
Self-employed in agriculture	-1.6
	(1.1)
Self-employed outside agriculture	-0.2
	(2.8)
Land (acres)	-0.1
	(0.2)
Dwelling type: katcha	-1.1**
	(0.5)
Accounts held (#)	0.1
	(0.5)
Savings groups (#)	0.7
	(0.8)
Takes savings decision at home	-1.1
	(0.8)
Trusts the bank agent and banks	-0.6
	(0.6)
Impatient	-0.3
	(0.5)
Distance to the bank agent (km)	-0.6
	(1.4)
R^2	0.15
Mean dependent (control)	12.9

The dependent variable is the number of weekly interviews attended by the individual. *** significant at 1 percent, ** significant at 5 percent, * significant at 10 percent.

The next tables provide robustness checks for Table 3. Table 11 shows the results do not change when we include control variables.[23] Table 12 presents the impact on the levels of the dependent variables (INR). As households built up a stock prior to the start of the experiment, we include the baseline value of the outcome - and thus run ANCOVA regressions - for all the stock variables (Panel B and D). The results are similar to Table 3, and the conclusions are unchanged.

Table 13 presents the correlation between the different measures of wage income and the other savings tools the household may use: SHGs, agricultural cooperatives, the post office and other accounts. As explained in Section 2.2, cooperative bank accounts are used to receive income from crop sales, and post offices and other bank accounts for receiving welfare payments. We show the results both with (columns 3 and 5) and without (columns 2 and 4) the deposits made by others. We do not make this differentiation for SHGs, as deposits and withdrawals are only made by household members themselves.

[23]The coefficients of the control variables are available upon request.

Table 11: Treatment Effect on Savings Behavior - Including Control Variables

	BCSA account	SHGs	Cooperatives	Post office and other accounts	Cash at home	Money guarded	Jewelry, grain and livestock	Total
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Deposits made by the respondent								
New account	1.0***	0.1		-0.0				1.1***
	(0.1)	(0.1)		(0.0)				(0.1)
R^2	0.20	0.15		0.02				0.19
Mean dependent (control)	0.1	0.2		0.0				0.2
Panel B: The respondent's stock of savings								
New account	2.97***	-0.08	-0.07	0.41				1.33***
	(0.26)	(0.23)	(0.29)	(0.32)				(0.36)
R^2	0.50	0.71	0.60	0.37				0.47
Mean dependent (control)	0.1	1.5	1.5	2.0				4.3
Panel C: Total deposits made by household members								
New account	1.00***	0.06		0.02				1.02***
	(0.12)	(0.10)		(0.03)				(0.15)
R^2	0.20	0.09		0.05				0.15
Mean dependent (control)	0.1	0.3		0.0				0.4
Panel D: Total stock of savings of household members								
New account	2.80***	-0.08	-0.03	0.33	0.04	-0.07**	-0.18	0.13
	(0.26)	(0.44)	(0.37)	(0.34)	(0.16)	(0.03)	(0.48)	(0.20)
R^2	0.51	0.43	0.53	0.40	0.18	0.08	0.40	0.46
Mean dependent (control)	0.3	2.9	2.5	2.6	5.7	0.1	8.2	9.4
Observations	2685	2685	2685	2685	2685	2685	2685	2685

The table presents the impact on the respondent's personal savings (panel A and B) and on the total household savings (panel C and D). For each asset, we present the impact on the amount deposited during the seven days that precede the interview date and the balance. We use a log specification of the outcome variables by implementing an inverse hyperbolic sine transformation. The different savings tools are: (1) the BCSA account, (2) SHGs and other informal neighborhood groups, (3) agricultural cooperatives, (4) the post office and other accounts, (5) cash at home, (6) money guarded by others, (7) the total stock of jewelry, grain and livestock, and (8) the total over all the tools. All columns include time and village fixed effects and the variables listed in Table 1 (apart from the number of interviews). Standard errors are clustered at the household level. *** significant at 1 percent, ** significant at 5 percent, * significant at 10 percent.

Table 12: Treatment Effect on Savings Behavior - Levels

	BCSA account	SHGs	Cooperatives	Post office and other banks	Cash at home	Money guarded	Jewelry, grain and livestock	Total
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Deposits made by the respondent								
New account	30.0***	-0.3		-0.4				29.3***
	(5.6)	(1.4)		(1.0)				(5.8)
Mean dependent (control)	1.6	3.3		1.5				6.4
Panel B: The respondent's stock of savings								
New account	180.8***	-24.1	-100.8	-37.9				-50.8
	(31.1)	(118.2)	(201.1)	(63.8)				(283.6)
Mean dependent (control)	16.4	378.4	505.8	203.2				1103.9
Panel C: Sum of deposits made by household members								
New account	26.1***	-1.5		0.6				25.2***
	(6.5)	(2.1)		(1.5)				(7.2)
Mean dependent (control)	5.4	7.0		2.8				15.2
Panel D: Total stock of savings of household members								
New account	178.7***	71.0	69.4	38.0	33.1	-5.4**	1121.1	1159.7
	(31.1)	(166.3)	(335.3)	(109.8)	(163.0)	(2.4)	(3143.0)	(3273.3)
Mean dependent (control)	118	811	654	403	827	6	17896	20714
Observations	2685	2685	2685	2685	2685	2685	2685	2685

The table presents the impact on the respondent's personal savings (panel A and B) and on the total household savings (panel C and D). For each asset, we present the impact on the amount deposited during the seven days that precede the interview date and the balance (in INR). The different savings tools are: (1) the BCSA account, (2) SHGs and other informal neighborhood groups, (3) agricultural cooperatives, (4) the post office and other accounts, (5) cash at home, (6) money guarded by others, (7) the total stock of jewelry, grain and livestock, and (8) the total over all the tools. All columns include time and village fixed effects and control for gender. In the panels B and D we also control for the baseline value of the outcome variable. Standard errors are clustered at the household level. *** significant at 1 percent, ** significant at 5 percent, * significant at 10 percent. 1

For post offices and other bank accounts, there is a negative correlation if we only include transactions made by household members (column 4), and a positive impact if we also include the transfers paid on these accounts (column 5). These results are mechanic, as transfers mainly consist of MGNREGA payments, which is a form of wage labor. Income is higher during weeks in which MGNREGA payments are made, which explains the positive correlation in column (5). As these accounts are not protected, villagers tend to withdraw the payments sooner rather than later, which leads to the negative correlation in column (4). Note the impact is the same for the treated and control households, and for earnings by the respondent and by other household members. Finally, the columns (1) to (3) show there is no correlations with savings with SHGs and cooperatives. The latter is not surprising, given households only receive crop payments - which are independent from wage income - on these accounts.

For completeness, Table 14 presents the correlation between the different measures of wage income and the stocks of savings households may own: cash at home, money guarded by others and the total stock of jewelry, grain and livestock. Income and cash savings are positively associated, but there is no difference between treated and control households. Moreover, the impact of the respondent's own income is similar to that of other household members.

Table 13: Smoothing through Savings - Other Savings Tools

	SHGs	Cooperatives		Post office / other banks	
		Household members	All transactions	Household members	All transactions
	(1)	(2)	(3)	(4)	(5)
Panel A: Wage income (continuous)					
Income	0.03	-0.01	-0.01	-0.23***	0.10***
	(0.02)	(0.01)	(0.02)	(0.04)	(0.03)
New account x income	-0.02	0.03	-0.00	0.07	0.02
	(0.02)	(0.02)	(0.02)	(0.05)	(0.03)
Total effect for treated hh	0.01	0.02	-0.01	-0.16***	0.12***
	(0.01)	(0.02)	(0.01)	(0.04)	(0.02)
Panel B: Wage income (categorized)					
Income high	-0.10	0.04	0.07	0.68***	-0.45***
	(0.08)	(0.07)	(0.10)	(0.18)	(0.15)
New account x income high	0.05	-0.15	-0.08	-0.14	0.04
	(0.10)	(0.13)	(0.10)	(0.23)	(0.18)
Total effect for treated hh	-0.05	-0.11	-0.01	0.54***	-0.41***
	(0.06)	(0.11)	(0.05)	(0.15)	(0.13)
Panel C: Wage income (categorized for respondent and for other household members)					
Respondent high	-0.14	0.09	0.15	0.56***	-0.04
	(0.12)	(0.09)	(0.13)	(0.18)	(0.15)
New account x resp high	0.11	-0.11	-0.12	-0.13	-0.14
	(0.13)	(0.14)	(0.12)	(0.22)	(0.19)
Others high	0.11	0.02	0.24	0.61**	-0.28
	(0.08)	(0.17)	(0.23)	(0.29)	(0.24)
New account x others high	0.02	-0.12	-0.23	-0.21	-0.15
	(0.14)	(0.28)	(0.26)	(0.39)	(0.50)
Total effect for control hh	-0.04	0.10	0.39	1.17***	-0.32
	(0.10)	(0.13)	(0.29)	(0.37)	(0.33)
Total effect for treated hh	0.09	-0.12	0.04	0.82**	-0.61
	(0.12)	(0.25)	(0.13)	(0.32)	(0.47)
Mean dependent (control)	0.3	-0.2	-0.0	-0.7	0.0
Observations	2685	2685	2685	2685	2685

The dependent variables are the hyperbolic sine transformations of the difference between deposits and withdrawals (1) into the BCSA account, (2) with SHGs, (3) with cooperatives by household members only, (4) with cooperatives by anyone, (5) with the post office and into other banks by household members only, (6) with the post office and into other banks by anyone. All columns include household and time fixed effects. Standard errors are clustered at the household level. *** significant at 1 percent, ** significant at 5 percent, * significant at 10 percent.

Table 14: Smoothing through Savings - Stock

	Cash at at home (1)	Money guarded (2)	Jewellery, grain and livestock (3)
Panel A: Wage income (continuous)			
Income	0.11***	0.00	0.00
	(0.03)	(0.01)	(0.01)
New account x income	0.03	-0.00	0.01
	(0.04)	(0.01)	(0.02)
Total effect for treated hh	0.14***	-0.00	0.02
	(0.03)	(0.00)	(0.02)
Panel B: Wage income (categorized)			
Income low	-0.50***	-0.03	0.02
	(0.14)	(0.04)	(0.05)
New account x income low	-0.21	0.03	-0.10
	(0.18)	(0.05)	(0.09)
Total effect for treated households	-0.71***	0.00	-0.08
	(0.12)	(0.02)	(0.07)
Panel C: Wage income (categorized for respondent and for other household members)			
Respondent low	-0.35***	0.00	0.02
	(0.14)	(0.04)	(0.06)
New account x resp low	-0.09	-0.01	-0.12
	(0.18)	(0.04)	(0.09)
Others low	-0.87***	0.00	-0.07
	(0.25)	(0.01)	(0.09)
New account x others low	-0.03	0.05	0.16
	(0.30)	(0.05)	(0.11)
Total effect for control hh	-1.22***	0.01	-0.06
	(0.30)	(0.04)	(0.08)
Total effect for treated hh	-1.35***	0.04	-0.02
	(0.22)	(0.05)	(0.08)
Mean dependent (control)	5.7	0.1	8.2
Observations	2685	2685	2685

The dependent variables are the hyperbolic sine transformations of (1) cash kept at home, (2) money guarded by others and (3) jewellery, grain and livestock. All columns include household and time fixed effects. Standard errors are clustered at the household level. *** significant at 1 percent, ** significant at 5 percent, * significant at 10 percent.

Balance Check of Outcome Variables at Baseline

Tables 15 and 16 provide a balance check for the baseline values of the outcome variables that are presented throughout the paper. The only significant difference between the treated and the control households, is the expenditures on (perishable) food (at 10%). Therefore, we conclude that the sample is not only balanced for baseline characteristics (Table 1), but also for outcome variables. Note there is no balance check for three outcome variables: (i) *savings on the BCSA account* because the accounts were not yet open, (ii) *loans* because we only asked about outstanding loans, and not about the flows of loans over the past week, and (iii) *sales of goods* because they were not included in the baseline questionnaire.

Table 15: Balance Check of Outcome Variables at Baseline: Savings and Expenditures

	Mean (Std. dev.) (1)	Coefficient on *New account* (Std. errors) (2)
Savings at the respondent level		
SHGs	0.97	-0.17
	(2.58)	(0.36)
Cooperatives	0.98	-0.41
	(2.48)	(0.35)
Balance with post office and	1.44	-0.20
in other accounts	(2.52)	(0.35)
Total savings	3.00	-0.77
	(3.44)	(0.48)
Savings at the household level		
BCSA account	0.07	-0.14
	(0.73)	(0.10)
SHGs	1.96	-0.12
	(3.51)	(0.49)
Cooperatives	1.71	-0.09
	(3.06)	(0.43)
Balance with post office and	1.92	-0.39
in other accounts	(2.88)	(0.40)
Cash at home	4.02	0.25
	(3.15)	(0.44)
Money guarded by others	0.13	0.05
	(1.08)	(0.15)
Jewelry, grain and livestock	7.62	0.12
	(4.31)	(0.61)
Total Savings	8.86	0.22
	(2.89)	(0.41)
Expenditures		
Frequent expenditures	6.47	0.14
	(0.71)	(0.10)
Temptation goods	4.31	0.13
	(1.34)	(0.19)
Non-frequent expenditures	4.68	0.10
	(2.27)	(0.32)
Investments	2.65	0.19
	(3.60)	(0.51)
Total expenditures	7.27	0.13
	(1.11)	(0.16)
All food	6.43	0.18*
	(0.73)	(0.10)
Perishable food	5.56	0.24*
	(0.89)	(0.12)
Non-perishable food	5.72	0.21
	(1.00)	(0.14)
Observations	204	204

See Table 1

Table 16: Balance Check of Outcome Variables at Baseline: Nutrition, Transfers and Income

	Mean (Std. dev.) (1)	Coefficient on *New account* (Std. errors) (2)
Nutrition		
All food	12.30	0.25
	(1.40)	(0.20)
Perishable food	9.62	0.24
	(1.09)	(0.15)
Non-perishable food	11.92	0.52
	(2.36)	(0.33)
Transfers		
Transfers	0.25	0.02
	(1.67)	(0.23)
Household income		
Total income	5.49	-0.02
	(3.34)	(0.47)
Wage employment	4.65	0.07
	(3.47)	(0.49)
Agriculture	0.58	0.09
	(2.22)	(0.31)
Public transfers	0.29	-0.20
	(1.37)	(0.19)
Self-employment	0.51	0.00
	(1.88)	(0.26)
Livestock	0.18	0.10
	(1.04)	(0.15)
Rents	0.09	-0.18
	(0.89)	(0.12)
Forestry	0.09	-0.05
	(0.72)	(0.10)
Income of the respondent		
Wage employment	4.38	0.02
	(3.26)	(0.46)
Self-employment	0.50	-0.01
	(1.85)	(0.26)
Observations	204	204

See Table 1

Appendix C: Pre-specified and Exploratory Analysis

The pre-analysis plan has ID number AEARCTR-0000387 and can be consulted on the website of the American Economic Association RCT registry. The pre-analysis plan also describes the analysis done in Somville and Vandewalle (2018), which focuses on a different sample and treatment. The main deviation from the plan is the use of hyperbolic sine transformations for the dependent variables. This is in line with the most recent papers in the literature, and approximates a log transformation (Ravallion, 2017). There are additional outcome variables mentioned in the pre-analysis plan that we did not include in this version of the paper to keep it concise.

Our pre-analysis plan specifies four baseline characteristics for which we would test for heterogeneity in treatment effects: the respondent (i) is a women, (ii) is impatient, (iii) takes savings decisions in the household, and (iv) trusts both the bank agent and banks. We show those results here. In addition, we also focus on the distance between the bank and the respondent's house, as it is an important determinant of account usage (Dupas et al., 2018).

To estimate the heterogeneous effects we run separate regressions, which take the following form:

$$Y_{ikt} = \zeta_0 + \zeta_1 T_{ik} + \zeta_2 F_{ik} + \zeta_3 T_{ik} \times BC_{ik} + V_k + W_t + \eta_{ikt} \tag{5}$$

Y_{ikt} is the balance in respondent i's account the day we conducted weekly interview t in village k, and BC_{ik} the baseline characteristic. T_{ik} is still a dummy indicating the respondent is treated, F_{ik} she is a woman, and V_k and W_t are village and time fixed effects respectively.

Each column of Table 17 shows the result for a different characteristic. The treatment effect is positive and significant in all the specifications. The interaction term is significant for two baseline characteristics. First, patient respondents save more on their account than respondents who exhibit a larger impatience level at baseline. This is consistent with the theoretical expectation that more patient people save more. Second, the treatment effect is driven by respondents who live

close to their banker. In the columns (6) and (7) we split the sample between men and women: the estimates are less precise but suggest that distance mainly matters for women. This finding is confirmed when we run a triple difference-in-difference regression: distance matters, but it matters more for women than for men.

Table 17: Heterogenous Effects: Gender, Being Impatient, Takes Savings Decisions, Trusts the Bank Agent and Banks and Distance to the Bank

	Impact on the final balance of the following baseline characteristics:						
	Woman	Impatient	Decides savings	Trusts bank & bank agent	Distance to the bank All	Men	Women
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
New account	2.44***	3.41***	3.74***	2.82***	3.55***	3.00***	4.27***
	(0.31)	(0.33)	(0.69)	(0.45)	(0.43)	(0.55)	(0.68)
Baseline var	0.11	0.62**	0.19	0.49	1.10	0.90	0.86
	(0.24)	(0.28)	(0.45)	(0.31)	(0.70)	(1.21)	(1.47)
New account x	0.75	-1.36***	-1.11	0.04	-2.37**	-1.80	-3.32*
Baseline var	(0.47)	(0.50)	(0.76)	(0.56)	(0.96)	(1.40)	(1.85)
R^2	0.48	0.49	0.48	0.48	0.48	0.47	0.51
Mean dep (control)	0.1	0.1	0.1	0.1	0.1	0.0	0.2
Observations	2685	2685	2685	2685	2685	1312	1373

Each column presents the heterogeneous effects for a different baseline characteristic: the respondent (1) is a woman, (2) is impatient, (3) takes savings decisions at home, and (4) trusts both the bank agent and banks. In the columns (5) to (7), we look at the distance to the bank for the full sample, and for the sub-samples of men and women respectively. The dependent variable is the respondent's balance the day after we conducted the weekly interview. All columns include time and village fixed effects and control for gender. Standard errors are clustered at the household level. *** significant at 1 percent, ** significant at 5 percent, * significant at 10 percent.

Finally, the analysis of consumption smoothing (expenditures and calories) done in sections 3.4, 3.5 and 3.6 was not anticipated in the pre-analysis plan, but was triggered by the discussions and comments during seminars.